

Benjamin Rush's Educational Campaign against Hard Drinking

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ABSTRACT

More than 200 years ago, during a period of unprecedented production and consumption of distilled alcoholic beverages in the United States, Benjamin Rush launched a health education campaign that warned the public about the hazards of such beverages. He corrected erroneous notions about their presumed beneficial effects and accurately described more than a dozen alcohol-related health problems. Although the temperance movement has had a tumultuous history in the United States, the origin and long-standing tradition of temperance as a health promotion activity needs to be recognized. (*Am J Public Health*. 1993;83:273-281)

Introduction

On September 16, 1808, Benjamin Rush (1746 to 1813), the most prominent medical professor of his era, wrote a long and remarkable letter to his close friend, former President John Adams. In this letter, one of many in the intimate correspondence between these two signers of the Declaration of Independence, Rush described a dream in which he had been elected president of the United States. At the beginning of the dream, he is reticent about accepting the office; but, recognizing the opportunity it would give him to exercise his "long-cherished hostility to ardent spirits," he goes to Washington, where he persuades Congress to pass a law "to prohibit not only the importation and distilling but the consumption of ardent spirits." Great opposition appears; he receives many petitions "to advise Congress to repeal the law," but he refuses. Then a man appears in his office, and this "venerable but plain-looking" citizen explains in great detail how, as reasonable as the law might seem, it was simply not working. The dream ends with the man suggesting that Rush retire from the presidency and go back to his professor's chair to amuse his students with his "idle and impracticable speculations" or go among his patients "and dose them with calomel and jalap." Rush was then awakened by the "vexation . . . felt in being thus insulted" and was relieved to find that it had only been a bad dream.¹

In waking life, Benjamin Rush did not advocate prohibition. Instead, he was deeply committed to educating people about the hazards of distilled alcoholic beverages, which were so abundant and inexpensive in the United States during the late 18th and early 19th centuries that their excessive use constituted a major public health problem.^{2,3} The principal

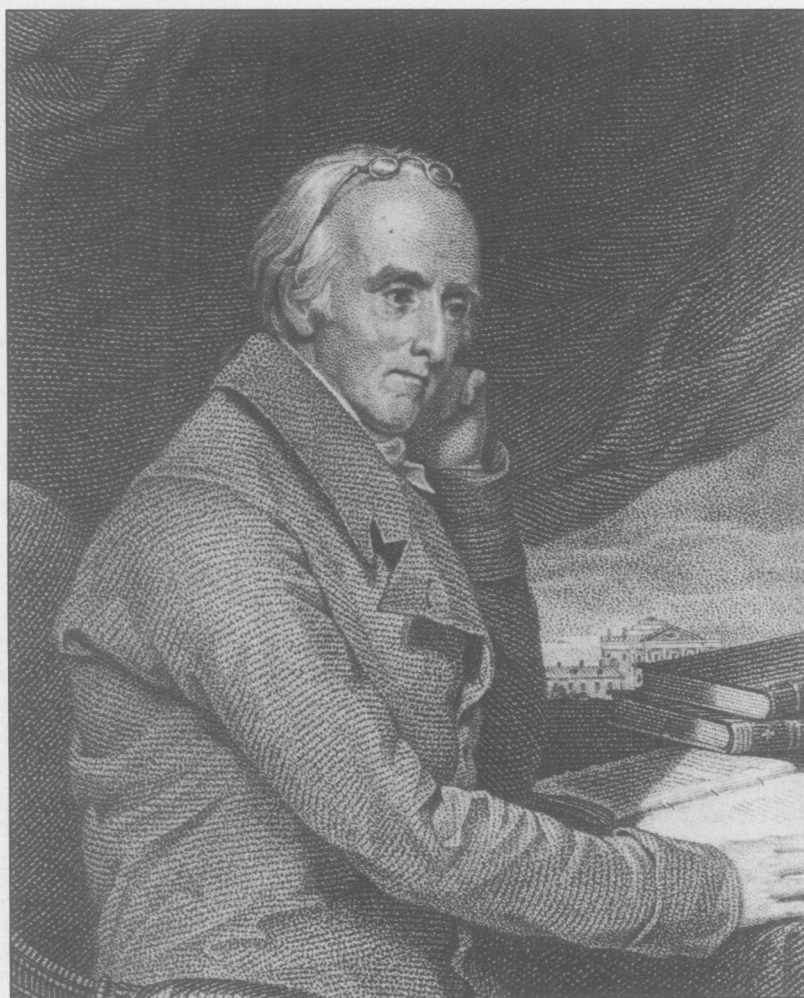
tool in Rush's prototypical health education campaign was his pamphlet, *An Inquiry into the Effects of Ardent Spirits upon the Human Body and Mind*, whose origins, contents, and evolution we shall examine below. Rush was convinced that, over time, the reasonableness of his argument against spiritous liquors would lead to their abandonment. He told his friend the Reverend Jeremy Belknap,

The good effects of our labors will appear in the next generation. Habitual drunkards are beyond the influence of reason, but young men will feel its force upon this subject and act accordingly. In the year 1915 a drunkard I hope will be as infamous in society as a liar or a thief, and the use of spirits as uncommon in families as a drink made of a solution of arsenic or a decoction of hemlock.⁴

The full story of the temperance movement that led to Prohibition (1920 to 1933) is well beyond the scope of this paper, but no history of the American experience with alcohol can be told without Benjamin Rush.^{2,3,5-9} Unfortunately, alcohol historians have tended to portray Rush as a 20th-century physician projected back in time. Therefore, we shall also look briefly at Rush himself. His self-doubting dream was significant in a deeper sense than might be readily apparent: when the man in the dream suggested that reason needs to be tempered by objective evidence and referred to Rush's "idle and impracticable speculations," he was questioning the very core of Rush's belief in medicine as a philosophical system.^{10,11} Speculative science and self-righteous be-

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Benjamin Rush. Courtesy of the Library of Congress.

lief were characteristic of Rush, but he was also an astute clinical observer, and much of what he said in his most famous pamphlet was accurate. Despite the tumultuous history of the temperance movement, the origin and long-standing tradition of temperance as a health promotion activity needs to be recognized.

The Makings of a Temperance Ferment

Although beer and wine have been an integral part of civilization since its earliest origins, distilled alcohol was unknown until medieval alchemists discovered the technique for creating it. Aqua vitae, or "water of life," as it was called, was not really a beverage; it was a medicine to be taken by the spoonful.¹² In 1576, when George Baker, Queen Elizabeth's court physician, translated a book on distillation into English, he entitled it *The Newe Jewel of Health*; in its introduction, he claimed

that aqua vitae will "make the blynde to see, and the lame to walke."¹³ At the time, aqua vitae was manufactured primarily by apothecaries.

By the 18th century, however, distilled alcoholic beverages were important products of commercial manufacture. In 1690, to create a broader market for grain, Parliament passed a law that promoted the nonmedical manufacture of spirits. This law, which was successful economically, also launched an era in which gin (raw spirits flavored with juniper berries) replaced beer as a standard beverage among the urban poor, who consumed it in enormous quantities. During the first half of the 18th century, London suffered a "gin epidemic" as excessive gin drinking became a major cause of morbidity and mortality.¹⁴ In his classic history of public health, George Rosen called the efforts to pressure Parliament to respond to the gin problem "a prototype of public health agitation."¹⁵

Decades later, when Benjamin Rush began his campaign against "ardent spirits," as distilled alcoholic beverages such as gin, rum, and whiskey were called, American whiskey production was rising, particularly on the frontier, where local distilling was a valuable means of converting grain into a form that could be more easily stored or shipped.² Consumption of alcoholic beverages was also rising, and Rush was concerned about the attendant health consequences.

Born in Pennsylvania in 1746, Rush received an evangelical Christian education before apprenticing himself to a Philadelphia physician. In 1766, he traveled to the University of Edinburgh in Scotland, then the world center of medical knowledge, where he studied toward his MD degree. Medicine at Edinburgh was based on a conception of disease as imbalance in the nervous system.^{10,16} Because distilled beverages were considered strong nervous system stimulants, their excessive use was naturally thought to be problematic, and clinical teaching, which was important at Edinburgh, drew upon a patient population that was increasingly consuming large quantities of whiskey in place of beer. Not surprisingly, Rush's teachers presented many cases whose illnesses were associated with "too many visits to the dram shop."¹⁷

The spirit of the Enlightenment counseled optimism that human reason and understanding would lead to a new era of medicine in which diseases would be cured and also prevented. The public might even gain sufficient understanding to doctor itself, according to another famous Edinburgh graduate, William Buchan, whose *Domestic Medicine*, first published in 1769, gave people the means to accomplish this end.¹⁸⁻²⁰ Buchan's book contained a brief chapter on temperance (which he called "the parent of health"), a subject that Rush would elevate to unprecedented public awareness.²¹

A Health Education Campaign Is Launched

Upon completing his studies in 1769, Rush returned to Philadelphia to begin his medical practice and become one of the first medical professors in the colonies.^{10,22,23} In 1777, while serving in Washington's army, Rush wrote a pamphlet called *Directions for Preserving the Health of Soldiers*; in it, among other points, he cautioned against the then-com-

mon use of spiritous liquors to guard against the effects of heat or cold, or to relieve the effects of fatigue.²⁴ He elaborated on these warnings in 1782 in a long public letter to the editor of *The Pennsylvania Journal*.²⁵ At the time, the harvest was accompanied by the use of large quantities of distilled beverages, which were thought to help protect against the effects of the heat and to fortify those engaged in hard labor. Rush told his readers his purpose was "to show, first, that spiritous liquors are unnecessary; and secondly, that they are mischievous and often produce the diseases they are intended to obviate during the time of harvest." Making his arguments in clear and forceful language and suggesting alternate beverages such as buttermilk and water or beer and water, he laid out the beginnings of a theme that he would expand in the years that followed.

In 1784, less than 2 years after the end of the War for Independence and nearly 3 years before the creation of the Constitution of the United States, Rush published the first edition of his most famous pamphlet, giving it the title *An Enquiry into the Effects of Spiritous Liquors upon the Human Body, and Their Influence upon the Happiness of Society*.²⁶ He had just returned to Philadelphia from a trip to Carlisle, then in the backcountry of Pennsylvania, where he was establishing a college. He was appalled by the predilection of the frontiersmen for building stillhouses on nearly every plot of land. "The quantity of rye destroyed and of whiskey drunk in these places is immense," he wrote in his diary, "and its effects upon their industry, health, and morals are terrible."^{23(p303)} He told the Reverend William Linn, a fellow trustee of the college:

I wish it was thought compatible with the duties of the pulpit to teach our Presbyterian farmers how much the credit of religion and the honor of society were concerned . . . in abolishing whiskey distilleries and converting them into milkhouses . . . [and] in drinking cider and beer instead of whiskey, toddy, or grog.²⁷

In his reply, the Reverend Mr. Linn made it clear that he did not think the frontiersmen would change their ways.^{27(p334)}

Rush, however, was convinced that a rational explanation of the medical evidence against spiritous liquors would have the desired effect. He begins his essay by defining his topic and placing it in historical perspective:

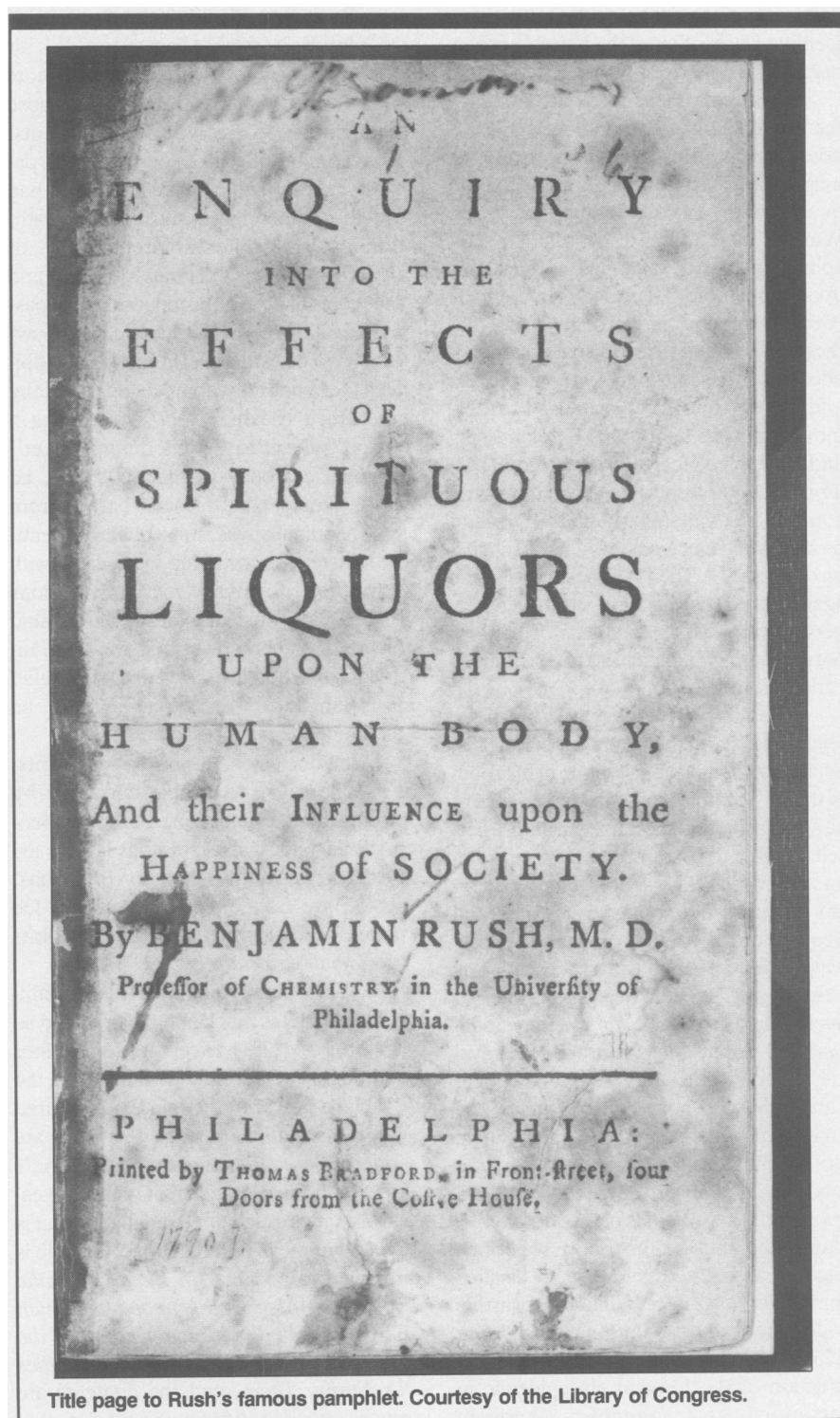
By spirits I mean all those liquors which are obtained by distillation from

the fermented juices or substances of any kind. These liquors were formerly used only in medicine.—They now constitute a principal part of the drinks of many countries.

Since the introduction of spiritous liquors into such general use, physicians have remarked that a number of new diseases have appeared among us, and have described many new symptoms as common to old diseases . . .²⁶

He then explains that, with continued use, spiritous liquors cause (1) stomach discom-

fort and vomiting in the morning, accompanied by tremors that are relieved only by taking another dose; (2) "dropsy," the general term that was used for the accumulation of fluid in the body (a symptom that, occurring in a heavy drinker today, would elicit suspicion of either cirrhosis of the liver or alcoholic cardiomyopathy); (3) "obstruction of the liver"; (4) "madness"; (5) "palsy"; and (6) "apoplexy," these last two being names for stroke (which late-



Title page to Rush's famous pamphlet. Courtesy of the Library of Congress.

20th-century epidemiologic studies have identified as another of the possible consequences of heavy drinking).

Identifying these as "only a few of the principal disorders produced by spiritous liquors," Rush goes on to stress the magnitude of the problem: "spiritous liquors destroy more lives than the sword. War has its intervals of destruction—but spirits operate at all times and seasons upon human life." Turning to the effects of spirits upon property, he observes that their use leads to idleness, resulting in inadequate houses, fields without fences, and poorly tended livestock. Furthermore, spiritous liquors have "distressing and terrible" effects upon the "*moral faculty*," making men "peevish and quarrelsome" and causing them to "violate promises and engagements without shame or remorse."²⁶ Then he goes on to argue against their use in very cold weather, very warm weather, or times of hard labor, repeating much of what he said in his earlier essays.

After asking rhetorically, "but if we reject spirits from being part of our drinks, what liquors shall we substitute in the room of them?" he notes that "the experience of all ages and countries, and even nature herself all seem to demand drinks more grateful and cordial than simple water." In an era of increasing population density and frequent contamination of water supplies, water sometimes had a poor reputation as a beverage. Therefore he suggests alternatives: cider, beer, wine, or sweetened vinegar and water. Cider and beer, he says, are "wholesome" beverages, and beer "abounds with nourishment—hence we find many of the commonpeople in Great Britain endure hard labour with no other food than a quart or three pints of this liquor, with a few pounds of bread a day."²⁶ During the 18th century, beer was often cited as a healthy alternative to distilled spirits; for example, William Hogarth's widely reproduced etching, *Gin Lane* (1751), which depicts the death and destruction of the London gin epidemic in cartoonish grotesqueness, stands in marked contrast to his *Beer Street*, which is a picture of urban health and industry. Pleased with the progress of brewing in Pennsylvania, Rush advocates supporting this trend by temporarily exempting breweries from taxation while, at the same time, "imposing the heaviest of taxes on whiskey distilleries." Adjustment of the relative rates of taxation on beer and spirits was one of the means by which the London gin epidemic had been brought under control.¹⁴

Rush then identifies three groups of people who he thinks are at special risk for getting into trouble with spiritous liquors as a form of self-medication: (1) Those with chronic stomach or bowel ailments, for whom he cites his experience with patients whose medicinal use of spirits had led to addiction and subsequent death, adding, "the different preparations of opium are a thousand times more safe and innocent than spiritous liquors in all spasmodic affections of the stomach and bowels."²⁶ (The addictive properties of opiates were not fully appreciated until long after Rush's death.^{28,29}) (2) Those living in areas "subject to the intermitting fever" (recognized today as malaria), who, he says, should take "Jesuits bark" (from which quinine was subsequently identified) instead of fortifying themselves with spirits. (3) Those who "follow professions that require constant exercise of the mind or body, or perhaps both"; for these individuals, who "are very apt to seek relief from fatigue from spiritous liquors," he recommends tea instead.²⁶

In conclusion, he makes two points. First, he says, "a people corrupted by strong drink cannot long be a *free* people." Second, just as spiritous liquors led to a decrease in the population of Indians, so too are frontiersmen threatened. He therefore advises people to give up spirits "*suddenly and entirely*."²⁶

The second edition of Rush's pamphlet³⁰ (1787) is much like the first, and so is the third³¹ (1791), except for some minor additions, including a warning that the "sublime power of the mind" is impaired among hard drinkers, even when they are sober. However, the fourth edition³² (1805) is a major revision in which the essay assumes much of the final form that is evident in the eighth edition.³³ The title is modified to become *An Inquiry into the Effects of Ardent Spirits upon the Human Body and Mind, with an Account of the Means of Preventing and of the Remedies for Curing Them*, and the contents are much expanded. After making it clear that his inquiry will be confined to ardent spirits, he provides a lurid catalogue of the effects of acute drunkenness, which he calls an "odious disease." The list of consequences of habitual use is extended (see Appendix 1), "simple water" is offered as the first of many alternate beverages, the list of causes predisposing to the use of distilled spirits is enlarged upon, and a lengthy discussion of cures for both acute and chronic drunkenness is added in place of his previous conclusion.

Rush's Medical Reputation

Although Rush's clinical observations on the harmful effects of hard drinking were astute and he was a pioneer in communicating these hazards to the public, his medicine was that of an earlier era, as evidenced by the cures he promoted in the later editions of the *Inquiry*. Sticking a feather down the throat to induce "puking," plunging the whole body into cold water, whipping the patient severely, and inducing profuse sweats and bleeding were among the remedies he offered for acute drunkenness. For habitual drunkards, his suggestions included Christian religion, guilt, shame, emetics, blisters to the ankles, salivation, and oaths.

Rush invented and taught a system of medicine that conceived of all diseases as sharing the same underlying pathophysiology: excessive nervous stimulation.¹⁰(pp361–366) This conception offered an explanation for the physical harm associated with the use of spiritous liquors, which, at the time, were considered to be strong stimulants. Talking about the chronic effects of ardent spirits, Rush explained:

In the body, they dispose to every form of acute disease; they moreover *excite* fevers in persons predisposed to them from other causes. This has been remarked in all the yellow fevers which have visited the cities of the United States. Hard drinkers seldom escape, and rarely recover from them.³³

More than his conception of alcohol's relationship to disease, however, Rush's therapeutic principles have figured most prominently in his treatment by medical historians. Bleeding and purging were standard treatments at the time, but Rush's aggressive application of these forms of depletion (the putative antidote for excessive stimulation) to the sickest of his patients set a new standard that influenced an entire generation of medical practitioners.³⁶ Several years after the Philadelphia yellow fever epidemic of 1793, a journalist named William Cobbett compared Rush's published list of successful cures with the mortality bills for the city and concluded that Rush had been killing patients instead of curing them. As medical historian Richard Harrison Shryock put it: "The more his treatment was applied, the faster the poor people succumbed. We might say, today, that there seemed a positive correlation between the increase in bleeding and the increase in mortality."³⁷ Rush sued Cobbett for slander. Cobbett lost and was fined \$5000.³⁸

Nevertheless, Rush's controversial approach to therapy and his stubborn public defense of it brought him such negative notoriety that his practice fell off. In 1797, he was saved from financial ruin when President Adams appointed him treasurer of the US Mint, a post he held until the end of his life. When the US minister to Portugal learned of Rush's appointment, he wrote home to a friend:

I have been much amused in reading of some files of American papers by the last vessel. I see the old dispute revived with great violence for [i.e., over] bleeding for fever and ague, and that Dr. Rush is charged with bleeding many hundreds to death . . . I was not very much surprized [sic] at this charge, but I confess I was surprized [sic] to see him appointed treasurer of the mint. I hope he won't bleed that to death also.³⁹

Despite the controversy surrounding his medical system, Rush taught more medical students during his 40-year career than did any other professor, and his collected medical essays were published to become the first American medical textbook.³⁵ He was instrumental in launching a physicians' temperance movement, which successfully lobbied Congress to pass a tax on whiskey that promised to finance the new government while at the same time promoting the health of the people. However, the tax was unpopular: in 1794 it provoked a rebellion in western Pennsylvania that President Washington quelled with the mobilization of 15 000 troops (which was either an excessive response to a deeply felt public protest or a necessary action to ensure the stability of the new government, depending on how one reads the historical accounts that are still being sorted out).⁴⁰ Because it was widely seen as an unfair burden on farmers, who, in an era before the advent of canals, railroads, or steamboats, had no choice but to use their small stills to convert their grain to a more manageable form,² the tax had been difficult to collect, and in 1802, it was repealed.

Temperance as a Moral Crusade

After Rush's death, when the economics of distilling began to change, his vision of temperance became a reality. However, it was the clergy who disseminated the message. The American Temperance Society, formed in 1826 by a group of ambitious clergymen, quickly grew to become one of the most important social movements in American

history. By 1835, there were more than 8000 local, county, and state auxiliaries, claiming a membership of more than 1.5 million people; nearly one in five free adults in the United States were associated with the American Temperance Society.^{3(pp101-152),8(pp11-21)} Local chapters often reflected the concerns of women, abolitionists, businessmen, farmers, or other groups, but a synthesis of moral and health arguments was at the core of temperance thought. Along with Lyman Beecher's sermons, Benjamin Rush's *Inquiry into the Effects of Ardent Spirits* became a standard temperance tract.³

The notion of science blended with moralism may grate on our modern sensibilities, but during the 18th and 19th centuries, medicine and morality were not yet the separate spheres they tended to become during the 20th century.⁴¹⁻⁴³ Benjamin Rush was a man of science who read scriptures as revealed truth. Although a product of the Enlightenment, seeing human reason as the source of the ultimate perfection of the world, he was also a product of the first great religious revival in the New World—the Great Awakening, which occurred in the middle of the 18th century. Pious men of this era did not feel threatened by science; Newton's laws were proof (understandable by humans) that God had created an orderly universe. Rush's collected letters and medical essays reveal a deeply religious man who saw his world as a place where republicanism and triumphant reason would bring on the millennium and with it an end to disease and all other problems.⁴⁴ If his rationalism sometimes caused him to lose touch with reality (as in his aggressive therapeutics), the moral purpose he attached to his ideas shielded him from self-doubt (except for an occasional dream).

A sense of divine mission was inculcated in Rush by his teacher and uncle, the Reverend Samuel Finley, who was one of the Great Awakening's most important figures.⁴⁵ It was Finley who directed Rush to study medicine (the law being filled with too many temptations).^{22(pp7-8)} There is a similarity in style between Finley's sermons and Rush's essays, the former citing scripture to build arguments and the latter citing clinical cases.⁴⁶ And it is not surprising that Rush saw moral implications in his studies of nature, a subject on which he elaborated in another of his more famous essays, *An Inquiry into the Influence of Physical Causes upon the Moral Faculty* (1786).³⁵ He graphically illustrated the effects of temperance and intemperance in his "Moral and Physical

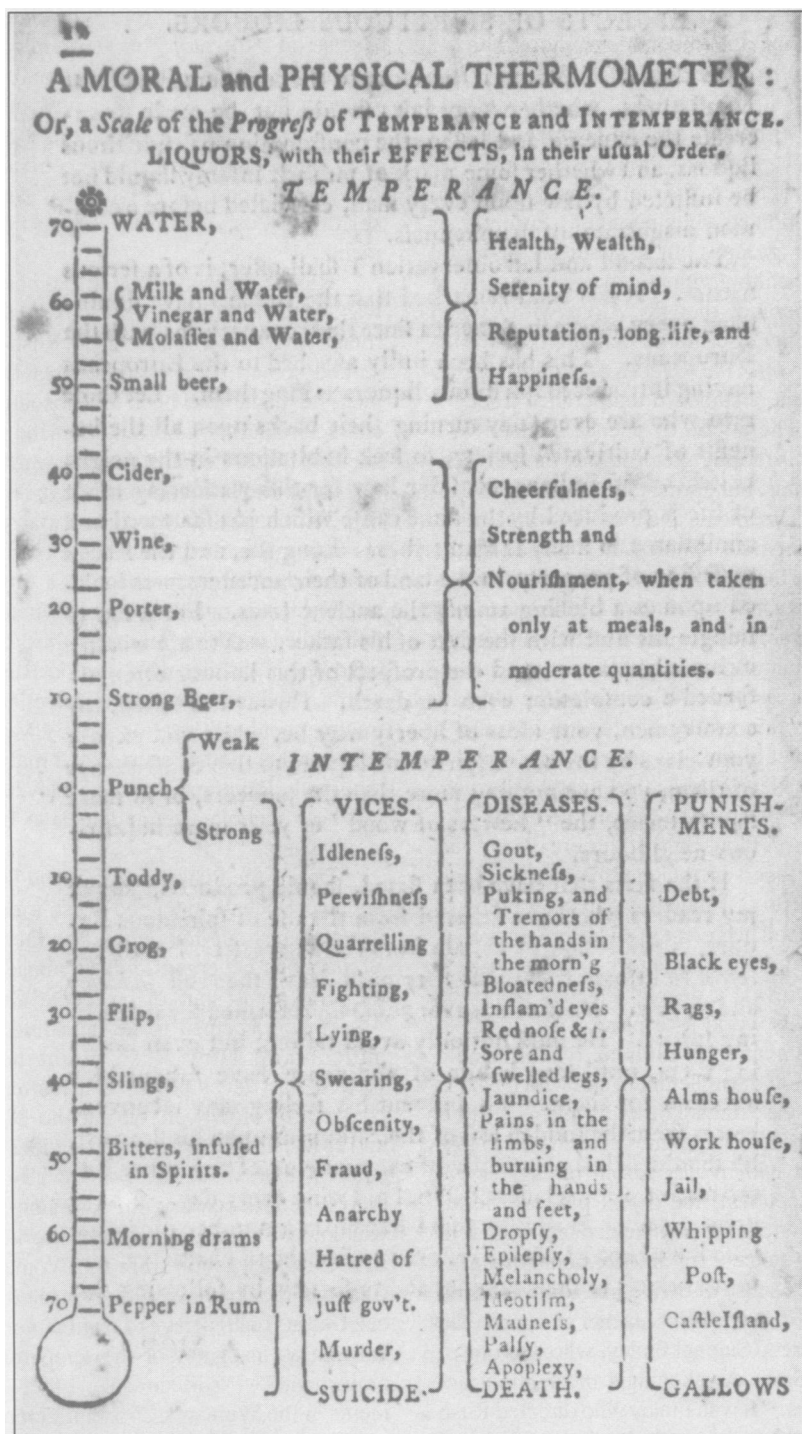
Thermometer," which assigns beverages and their moral and physical correlates to a scale on a thermometer. This one-page illustration, included in later editions of his *Inquiry*, links water or beer with health and happiness while associating beverages that contain increasing concentrations of spiritous liquors with increasingly serious vices, diseases, and punishments.^{2,33}

Rush's main teacher at Edinburgh was William Cullen, who was a close friend of David Hume.¹⁶ Had Rush absorbed some of the skepticism of these men, he might have been less absolute in characterizing spiritous liquors as the substance of evil. Perhaps the untoward effects of spiritous liquors on his own family helped to shape this view: before marrying his father, Rush's mother had endured a short and unhappy marriage to a drunkard. Rush was only 5 years old when his father died, and his mother's third husband was a distiller who was, in Rush's words, "unkind and often abusive in his treatment of her."^{10(pp27,166-167)} By way of contrast, his mother's sister had married the saintly Reverend Samuel Finley, who was both schoolmaster and uncle to Benjamin Rush.

During the 1830s, the American Temperance Society extended Rush's campaign against spiritous liquors to include all alcoholic beverages, whose abuse, in the perfectionist spirit of the Second Great Awakening, seemed to be impeding the millennium. How Rush might have viewed this development is a matter of conjecture. However, during the 1830s and 1840s, his *Inquiry* enjoyed a wider circulation than ever before.^{3(pp223-261)} By the end of the 19th century, Rush's name was well known among temperance workers. In 1885, a delegation from the Woman's Christian Temperance Union planted an oak tree at Rush's grave to commemorate his role as instigator of the temperance movement.^{22(p277)} Meanwhile, other elements in the Woman's Christian Temperance Union were busily campaigning for the "scientific temperance" instruction that eventually became mandated for public education in nearly every state.^{47,48}

Temperance within Changing Medical Contexts

Perhaps the most remarkable aspect of Rush's temperance legacy has been its durability. Rush's reputation as a healer plummeted after his death, and his rationale for aggressive therapeutics was ridi-



Benjamin Rush's "Moral and Physical Thermometer." Courtesy of the National Library of Medicine, Bethesda, Md.

culed. Bleeding and purging continued to be used by orthodox medical practitioners because—like stimulation with large doses of beverage alcohol, a standard therapy of the 1850s and 1860s—these therapies “worked” in that they produced a dramatic effect, which is what both doctors and patients expected of them.^{49,50} However, medical thinking about disease shifted toward a greater inquisitiveness

about its nature, and a new therapeutic skepticism began to emerge. This shift reflected the influence of the Paris school, with its emphasis on following the natural course of disease and learning from it, using the new science of clinical statistics as a means of doing so. The new emphasis on statistics also fostered more attention on the environmental causes of disease.^{51,52} Among the earliest statistics to be col-

lected were those on the role of intemperance as a cause of disease.⁵³

Another change in medical context in mid-19th-century America was the growth of various medical “sects,” such as botanics, hydropaths, and homeopaths, and an increasing reliance on self-care as taught by such popular books as Buchan's *Domestic Medicine*, which continued to evolve well into the 19th century, and its American successor, *Gunn's Domestic Medicine*. Temperance was a common theme in most of these paths to health. For example, abstinence from alcohol (along with coffee, tea, and tobacco) was an essential part of hydropathy, and the water cure, in turn, was claimed to purify the system to a level of harmony that would prevent the craving of foreign stimulants. The *Water-Cure Journal* reached more than 100 000 Americans during the 1850s. Sylvester Graham, who developed the wheat cracker as part of his program of dietary reform, began his career as a temperance lecturer.^{52,54-56}

Despite their diversity, all these competing approaches to health (and Rush's as well⁴¹) shared a common belief about the nature of disease: disease was the result of imbalance, a lack of harmony between the body and its environment. It followed, then, that cures—and, most importantly, the prevention of disease—required more attention to improving the environment. Therefore, the 19th-century emphasis on temperance cannot be separated from parallel concerns with unsanitary living conditions, immorality, and poor diet.^{49,52,55-57}

This holistic conception of disease was ultimately challenged by Koch's and Pasteur's bacteriologic discoveries, which suggested specific causes for specific diseases. These ideas were not easy to accept because they implied a moral randomness in the assignment of health and disease.⁵⁷ However, even with the emergence of modern scientific medicine, the excessive consumption of alcohol continued to be seen as a major health problem. In 1905, John Shaw Billings, in summarizing the physiological aspects of the liquor problem for the prestigious Committee of Fifty (which opposed Prohibition but favored other forms of control), concluded that “the excessive and continued use of alcoholic drinks tends to produce disease and shorten life.”⁵⁸ On the other hand, Billings was critical of the Woman's Christian Temperance Union-inspired educational message that characterized even moderate drinking as dangerous:

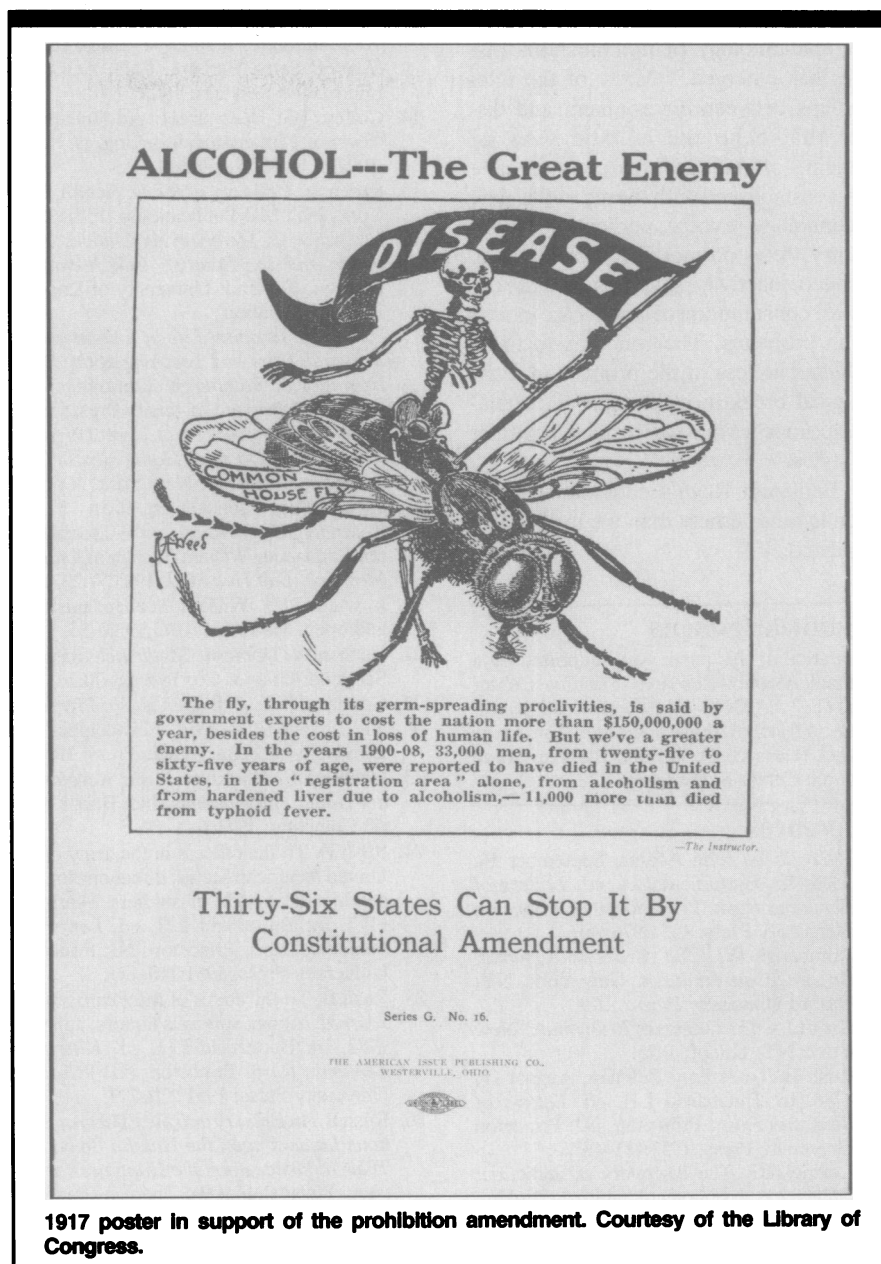
In view of what is known as to the effects of moderate or occasional use of alcoholic drinks upon man, much of the methods and substance of the so-called scientific temperance instruction is unscientific and undesirable.^{58,59}

In 1906, health leader Charles V. Chapin observed that, "although it is well recognized that the abuse of alcohol is an important factor in the causation of sickness and death, American health officers have held aloof from temperance work."⁶⁰

Even in the watershed event of Prohibition, medical views on alcohol remained important. In 1917, the membership of the American Medical Association narrowly passed a resolution opposing "the use of alcohol as a beverage" and discouraging "the use of alcohol as a therapeutic agent." Although the vote was close and the membership's views changed during the years that followed, the 1917 resolution was presented in Congress as evidence that the American Medical Association supported the prohibition amendment.⁶¹ Prohibition, the Eighteenth Amendment to the Constitution, was ratified in 1919 and went into effect in 1920. Although it was repealed in 1933 by the Twenty-first Amendment largely because of both the economic and political changes that accompanied the Great Depression and the social changes that came with the modern age, national prohibition was an integral part of the Progressive movement, and alcohol-related disease was a major concern before and during Prohibition.^{62,63}

In 1934, less than a year after the repeal of Prohibition, Haven Emerson, then president of the American Public Health Association, urged health workers to become actively involved in educating the public about the potentially harmful effects of alcohol.⁶⁴ In 1928, when Prohibition was the law of the land, he had documented its beneficial health effects.⁶⁵ He was also editor of the authoritative *Alcohol and Man*, which was highly regarded by both "wets" and "drys" at a time when pronouncements on alcohol often provoked heated debate.⁶⁶ In his 1934 presidential address at the 63rd annual meeting in Pasadena, Emerson made it clear that alcohol should be approached from a scientific rather than a moral point of view, but otherwise his concern was a 20th-century echo of Rush's, and, like Rush, he believed that alcohol education ought to be directed toward healthy, non-alcoholic drinkers.

Ironically, the rest of the 1930s (and the decades that followed) unfolded in a



1917 poster in support of the prohibition amendment. Courtesy of the Library of Congress.

manner that precluded the sort of educational approach that Emerson had advocated. The newly available B vitamins provided dramatic cures in malnourished alcoholics, casting doubt as to whether alcohol itself deserved its long-standing reputation as a potentially harmful substance. Successes in laboratory and clinical medicine led to a questioning of previous medical knowledge that rested primarily on statistical associations. For example, Benjamin Rush in the 18th century, William Osler at the beginning of the present century, and modern epidemiologists are in agreement that alcohol is the chief cause of cirrhosis of the liver (which, in 1987, was the ninth leading cause of death), but scientists after the repeal of Prohibition were unable to accept the statistical asso-

ciation as proof of causality because the vast majority of heavy drinkers (more than 90%) did *not* develop cirrhosis. Similarly, alcohol's reputation for harmful effects on offspring, on the heart, and on the digestive tract were discounted. As one pair of postrepeal researchers put it in dismissing the early 20th-century epidemiologic evidence linking heavy drinking with esophageal cancer, "these assertions are based entirely on statistical studies of death rates."⁶⁷⁻⁶⁹

The last third of the 20th century has brought us nearly full circle. The basic epidemiologic techniques that began to be forged during the 19th century were overshadowed during the great era of bacteriologic, nutritional, and hormonal discoveries that characterized the first half of the

20th century. Since the 1960s, however, a new epidemiology of noninfectious diseases has emerged.⁷⁰ Many of the relationships between environment and disease that echo the holistic view of medicine of the previous century have been reestablished with the aid of this new epidemiology (except, perhaps, for 19th-century views on mortality and disease). Tobacco, inactivity, poor diet, and the excessive consumption of alcohol are indeed health problems. The solutions to these problems lie less in the promise of technological breakthroughs than in population approaches that will result in healthier life-styles.⁷¹⁻⁷⁴

Benjamin Rush's educational campaign is more timely than we might have suspected. □

Acknowledgments

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APPENDIX 1—Medical Consequences of Hard Drinking as Perceived by Rush, Using Contemporary (MeSH)^a Terminology

Accidents
Alcohol amnestic disorder
Alcoholic intoxication
Alcoholism
Cardiomyopathy, alcoholic^b
Cerebrovascular disorders
Depression
Diabetes mellitus
Homicide
Hyperthermia
Hypothermia
Liver cirrhosis, alcoholic
Pancreatitis
Peripheral nerve diseases^c
Psychoses
Psychoses, alcoholic
Seizures
Suicide
Violence

^aMEDLINE searches using the non-alcohol-related terms from the above list and combining them (using the Boolean “and”) with “alcohol drinking” or “alcoholic intoxication” or “alcoholism” yield fairly extensive bibliographies. The full list of medical consequences of hard drinking is, of course, much larger than that presented in Rush's pioneering effort at health education.³⁴

^bRush did not diagnose as such; he noted only “dropsy.”

^cRush diagnosed this as gout, but in his medical text he describes a form of “gout in the extremities which seems to be produced exclusively by ardent spirits, and that is a burning in the palms of the hands, and soles of the feet.”³⁵(vol2,p149)

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